REMARKS

I. Introduction

In response to the Office Action dated April 27, 2007, Applicants have amended claim 1 to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been entered. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

II. Examiner Interview Summary

Applicants would like to thank the Examiner for extending the courtesy of a telephone interview to Applicants' representative on September 25, 2007. During the interview, claims 1 and 5 were discussed. Applicants representative explained, in reference to claim 1, that the length register of Baxter, which decrements as each transfer occurs, is not the same as the third register recited in the claims that stores a value representing the difference between the start address and the end address. The Examiner maintained the position that the recitation "a value corresponding to the difference between the end address and the start address" is broad enough to read on the length register of Baxter.

Regarding claim 5, Applicants pointed out to the Examiner that the arguments regarding the failure of the references to disclose two modes of operation were not addressed by the Examiner in the Office Action. The Examiner acknowledged that this argument was not addressed.

III. Claim Rejections Under 35 U.S.C. § 103

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Publication No. 2002/0026543 to Tojima in view of U.S. Patent No. 6,370,601 to Baxter. Claims 3 – 6 stand rejected under § 103(a) as allegedly being unpatentable over Tojima in view of Baxter and U.S. Patent No. 5,708,849 to Coke. Applicants traverse these rejections for at least the following reasons.

Claim 1 recites, among other things, a DMA controller capable of generating ring buffer addresses, comprising a first, second, and third register, wherein the third register, in said first mode of operation, contains the difference between the end address and the start address of the ring buffer. At least these features are not disclosed or even suggested by Tojima or Baxter, alone or in combination with each other.

The Examiner asserts that Tojima discloses every recited feature except a third register which sets the difference between the end address and the start address of the ring buffer and relies on Baxter to overcome this deficiency. Baxter appears to disclose a DMA controller and method for transferring data. The Examiner equates the length register disclosed by Baxter with the third register recited in claim 1. However, the length register disclosed by Baxter does not store the difference between the start and the end address. Rather, the length register stores the number of pieces of data to transfer (see column 1, lines 52 – 55). The length count register is decremented each time data is transferred (see column 3, lines 35 – 38).

In an exemplary embodiment of the invention as recited in claim 1, the third register stores the difference between the start and the end address. This value is used to move to the next cycle of a ring buffer transfer (*see, e.g.*, pages 12 – 13 of the pending application). Tojima, Baxter, nor any of the cited references disclose or suggest this feature. The Examiner asserts on page 2 of the Office Action that "a person could choose to count the difference between two

points in base 10 or base 2, and the number stored would be dramatically different, but the numbers would still represent the same thing, and that is all that is required by the claim." The third register, as recited in claim 1, is not a counter. Rather, it holds a value that is the difference between a known start address and a known end address. A number that is repeatedly decremented (the length value of Baxter) does not represent the same thing as the difference between a known start address and a known end address. Thus, the combination of Tojima and Baxter fails to disclose at least the third register recited in claim 1.

Regarding claim 5, the Examiner asserts that Tojima discloses every feature recited in the claim except a third register which sets the difference between the end address and the start address of the ring buffer, and means for setting the address increment of a non-contiguous area to the third register. The Examiner again relies on Baxter as allegedly teaching a third register which sets the difference between the end address and the start address of the ring buffer. The Examiner relies on Coke as allegedly teaching setting the address increment of a non-contiguous area to the third register.

Claim 5 is directed to a computer readable medium encoded with a computer program which causes a computer to operate in two modes, a ring buffer transfer mode and a rectangle block transfer mode, using the same three registers. In a ring buffer transfer mode, the second register is used to set the number of DMA transfers from the start address to the end address of the ring buffer and the third register is used to store the difference between the end address and the start address of the ring buffer. In the rectangle block transfer mode, the second register is used to set the number of DMA transfers in a contiguous area including rectangular areas and the third register is used to set the address increment of a non-contiguous area to the third register.

As set forth in response to the previous rejection, the Examiner asserts that the first register and the second register are disclosed by Tojima. However, Tojima merely discloses that three access patterns are available – a rectangle area, a first ring buffer, and a second ring buffer. Tojima further discloses the parameters associated with each access pattern. Tojima does not, however, specify how the parameters are stored in registers. Accordingly, Tojima fails to disclose that the second register stores the number of DMA transfers from the start address to the end address of the ring buffer in the ring buffer transfer mode and stores the number of DMA transfers in a contiguous area including rectangular areas in the rectangle area transfer mode. In fact, Tojima appears to disclose that the parameters are separated based on the associated type of access pattern (see paragraph [0256] and [0269]).

Furthermore, none of the cited references, alone or in combination with each other, disclose or suggest a third register that stores the difference between the end address and the start address of the ring buffer in a ring buffer transfer mode and sets the address increments of a non-contiguous area to the third register in a rectangle transfer mode. The Examiner appears to be relying on Baxter as disclosing a third register in the ring buffer transfer mode and Coke as disclosing a third register in the rectangle transfer mode. However, Baxter does not provide a suggestion for including a third register in Tojima as described above. Coke appears to disclose a DMS circuit wherein data stored at non-sequential addresses in memory can be transferred. Coke does not disclose ring buffer transfer operations nor rectangle block transfer operations. Furthermore, Coke does not disclose or suggest a register that stores the difference between the end address and the start address of the ring buffer in a ring buffer transfer mode and sets the address increments of a non-contiguous area to the third register in a rectangle transfer mode. The Examiner did not address this argument in the final Office Action. Accordingly, if the

Examiner wishes to maintain this rejection, Applicants respectfully request that all arguments be considered and addressed by the Examiner in the next non-final office action.

Additionally, as described above in reference to claim 1, Baxter does not disclose storing the difference between the start and the end address. Rather, Baxter discloses a length register which stores the number of pieces of data to transfer.

Accordingly, as each and every limitation must be disclosed or suggested by the prior art references in order to establish a *prima facie* case of obviousness (MPEP § 2143.03), and the cited references, taken alone or in combination with each other, fail to disclose or suggest at least the features recited above, it is respectfully submitted that independent claims 1 and 5 are patentable over the cited references.

Claims 2 – 4 and 6 depend from claim 1. Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Harness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for at least the reasons set forth above, it is respectfully submitted that all dependent claims are also in condition for allowance. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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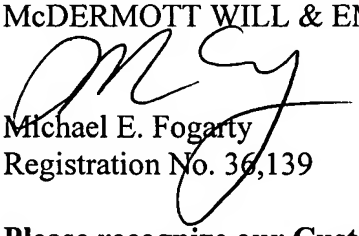

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